Volunteer Lake Assessment Program Individual Lake Reports

ARMINGTON LAKE, PIERMONT, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,368	**Max. Depth (m):**	10.3	**Flushing Rate (yr^{-1}):**	1.5
Surface Area (Ac.):	142	**Mean Depth (m):**	3.9	**P Retention Coef:**	0.63
Shore Length (m):	4,500	**Volume (m^3):**	2,340,500	**Elevation (ft):**	1334

TROPHIC CLASSIFICATION

Year	Trophic class
2005	OLIGOTROPHIC
2007	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

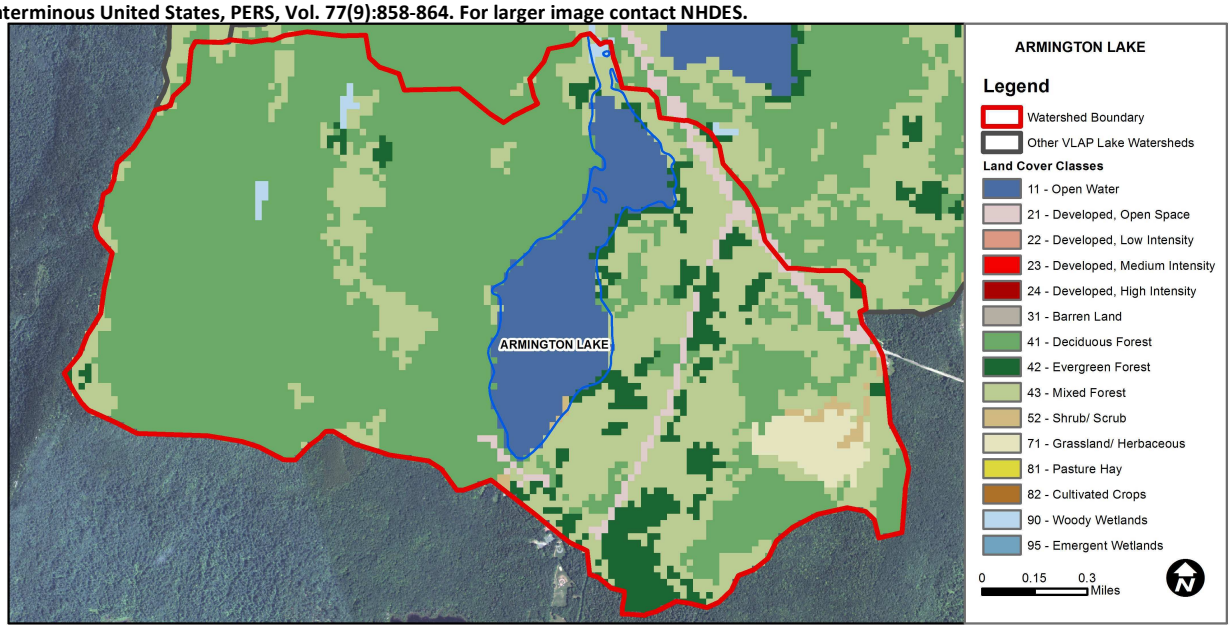
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Very Good	The calculated median is from 5 or more samples and is <= 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LAKE ARMINGTON - CAMP WALT WHITMAN BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.87	Barren Land	0	Grassland/Herbaceous	1.86
Developed-Open Space	1.96	Deciduous Forest	55.85	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	6.58	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	23.81	Woody Wetlands	0.36
Developed-High Intensity	0	Shrub-Scrub	0.57	Emergent Wetlands	0

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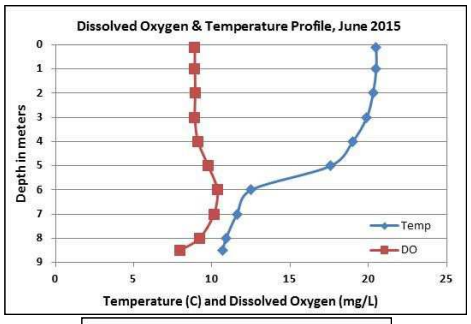
2015 Data Summary

Recommended Actions: Water quality was good in 2015 and representative of oligotrophic or high quality water conditions. The stable and improving trends are a positive sign and we hope to see this continue. The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff from lake and watershed properties. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource for property owners looking to minimize stormwater runoff from their properties. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were low in June, increased slightly in July and then decreased slightly in August. Average chlorophyll levels decreased from 2014 and were much less than the state median. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot and Inlet conductivity levels remained stable and low and were less than the state median. Historical trend analysis indicates stable epilimnetic (upper water layer) conductivity since monitoring began. Outlet conductivity was low in July and increased to slightly above average levels in August.
- **E. coli:** E. coli levels were low and much less than the state standards of 88 cts/100 mL for public beaches and 406 cts/100 mL for surface waters.
- **Total Phosphorus:** Deep spot, Inlet and Outlet phosphorus levels remained stable and low. Epilimnetic phosphorus was much less than the state median and historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus since monitoring began. We hope to see this continue!
- **Transparency:** Transparency remained stable from June to July and then increased (improved) in August. Average transparency was good and much better than the state median. Historical trend analysis indicates stable transparency since monitoring began. Transparency measured with the viewscope (VS) was much better than that measured without (NVS) and likely a better representation of actual conditions.
- **Turbidity:** Epilimnetic turbidity was low in June, increased slightly in July with the algal growth, and then decreased in August. Hypolimnetic (lower water layer) turbidity remained relatively stable and was within an average range for that station. Inlet and Oultet turbidities were stable and low.
- **pH:** Epilimnetic pH values were invalidated due to an error with a laboratory instrument and we apologize for any inconvenience. Historical trend analysis indicates highly variable epilimnetic pH since monitoring began. Hypolimnetic pH was low and less than the desirable range 6.5-8.0 units. Inlet pH levels were good and Oulet pH levels fluctuated below the desirable range.
- **Dissolved Oxygen/Temp:** Dissolved oxygen levels remained good throughout the water column in June and are sufficient to support aquatic life.



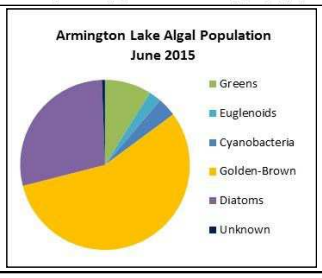


Table 1. 2015 Average Water Quality Data for ARMINGTON LAKE

Station Name	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	4.0	2.00	28.3		4	5.42	6.42	0.65	
Hypolimnion			27.9		6			0.96	6.29
Inlet			23.0		4			0.77	6.62
Outlet			51.3		6			0.72	6.46
Site 1				10					
Site 4				10					
Site 2b				10					
Site 4a				10					
Site 6a				10					
Site 6h				10					

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.